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The case study method: exploring the link between teaching and research

1. Introduction

Developed and formalised in the late 19th century by Christopher Columbus Langdell, Dean of the Harvard Law School, and later adopted by the Harvard Business School, the pedagogical case study is an active teaching method supporting the development of both theory and practice in the classroom and beyond (Gawel, 2012). It “offers the opportunity to investigate organizations in some detail, to explore the idiosyncratic contexts of individual firms, to search for patterns across case contexts. Any drawn conclusions can give a wider understanding of a phenomenon” (Ambrosini and Bowman, 2010, p. 7). It has therefore been used to support a reflective and critical approach to teaching and has become a significant contributor to teaching (Bonoma, 1989; Booth, Bowie, Jordan, & Rippin, 2000; Gill, 2011; Thompson & Dass, 2000). Equally, the case study method has also been used extensively in research projects that are not necessarily related to teaching (Eisenhardt and Graebner, 2007; Woodside, 2011; Yin, 2009). For example, case based research has been used ‘to examine the effectiveness of different approaches to changing organization structure’ (Miller and Friesen, 1982, p. 867). These two contrasting approaches to the employment of the case study method are a reflection of the broader scholarly nexus between teaching and research that underpins much of higher education (Hattie and Marsh, 2004). To the present, the extant literature on such case study usage has focused primarily on either valid, but theory-derived evaluations or in-depth field studies at a limited range of institutions. Thus there remains scant evidence at the present time of the relationship between the research and the teaching of case material (Ambrosini and Bowman, 2010; Booth et al., 2000; Geschwing and Brostrom, 2015; Healey, 2005; Mesny, 2013). This

research gap is important because this relationship is fundamental to the scholarly nexus between teaching and research in higher education (Fox, 1992; Hattie and Marsh, 2004). The purpose of this paper is to contribute to this gap by exploring the usage by scholars, mainly in the area of management studies, of the case study method to enhance either or both of their teaching and their research.

Recent years have seen major pressures on academics from the significant changes in institutional environments surrounding higher education: such changes have impacted on the balance between teaching and research demanded by universities (Davis and Graham, 2018; Geschwing and Brostrom, 2015; Jenkins and Healey, 2004). One aspect of such teaching and research activity concerns the development and use of case studies: some teachers simply use existing case material while others take a different approach and develop their own case material (Ambrosini and Bowman, 2010). This paper provides evidence that illuminates at least some of the motivations and outcomes of the changing balance between teaching and research in the context of such reforms in university governance (Brew, Boud, Lucas and Crawford, 2017; Leisyte, Enders and de Boer, 2009; Waring, 2017). Specifically, it contributes to the literature by identifying five different types of links amongst academics between their research and teaching and by developing a typology of the nature of those links. In this paper, we use the term 'links' to describe the different kinds of relationships between research and teaching practices derived from the development and use of the case study method. Beyond the theoretical interest of such a typology, the five different teacher-research groups that emerge from this study provide evidence that different teacher-researcher scholars have different motivations within higher education (Davis and Graham, 2018; Geschwing and Brostrom, 2015; Parker and Weik, 2014; Simons and Elen, 2007). The paper argues that such institutions will benefit from identifying, understanding and then acting upon

such differing research approaches and goals if they are to manage effectively members of their staff. Our study thus contributes to the improvement of management practice at higher education institutions.

The paper is organised in five sections. First, we review the literature and develop the research objectives. We then outline the research methodology and approach used in the study which combines an exploratory and a quantitative research phases. Next, the research findings are described and analysed. The results are then discussed and conclusions drawn. Finally, the paper identifies the managerial implications.

2. Literature review and research objectives

2.1 The Teaching-Research Nexus in Higher Education

Ever since Von Humboldt's nineteenth century concept of the role of the university (von Humboldt, 1970), teaching and research have been seen, by some academics at least, as complementary (Fox, 1992). The two areas have indeed similar objectives in terms of the advancement and communication of knowledge (Boyer Commission, 1998) and boundaries between the two areas have become blurred and processes linking research, its application and its teaching have become more integrated and processual (Davis and Graham, 2018; Jenkins, Healey and Zetter, 2007; Jones, Lefoe, Harvey and Ryland, 2012). It is this blurring and its implications for university policy that is the underpinning focus of this research.

From the broader strategic context, tertiary research and teaching establishments are, in effect, part of a globalised competitive system based in part on the evaluation of academic competences (Leisyte et al., Enders and de Boer, 2009; Jenkins et al., Healey and Zetter, 2007; Thornton, Walton, Wilson and Jones, 2018). They are obliged

continually to improve the “productivity” of their researchers measured in terms of various bibliometric indicators (Brew et al., 2017; Parker and Weik, 2014). At the same time, the globalisation of the education system encourages such establishments to maintain very high pedagogical standards, to deliver “excellence” in academic activities (Thornton et al., 2018; Van Vught, 2008; Yat Wai Lo & Sai Kit Ng, 2016). Hence the growing publishing demands of higher education institutions are increasingly likely to encourage teacher-researchers to bridge the gap between their research and teaching practices and develop “links” between them, thereby ensuring that they are mutually beneficial (Fox 1992; Healey and Jenkins, 2004; Mariken. and Visser-Wijnveen, 2009).

2.2 The role of case studies in linking research and teaching

Empirical evidence on the relationship between research and teaching is difficult to assemble for at least three reasons: first, because it is context specific to the academic subject (Darke, Shanks and Broadbent, 1998; Fox, 1992; Geschwing and Brostrom, 2015); second, because the complexity of the motivations require in-depth investigation and this does not easily lend itself to large-scale research studies (Eisenhardt and Graebner, 2007; Healey, 2005; Lamy and Lapoule, 2015); third, because the wide institutional variations in higher education make generalisation difficult (Banning, 2003; Booth et al., 2000; Jenkins and Healey, 2004). Given such complexity, this paper has chosen to focus mainly on management studies and, within this, to the research and development of related case material (Legendre, 1998; Zivkovic, 2012). Specifically, this paper explores the spectrum of activities from those scholars who use their research outputs to develop case material for teaching to other scholars who do not engage in such activities but simply purchase case material from outside institutions.

Case studies encompass a teaching objective that does not necessarily reflect the

research ambitions or interests of its authors (Gavel, 2012; Gill, 2011). Research articles generally adopt a neutral, distanced and factual tone with the purpose of explaining results to peers so that they can be re-applied, tested and, ideally, reproduced (Fox, 1992). By contrast, pedagogical case studies are designed to enable students to understand specific business and related situations (Desiraju. and Gopinath, 2001; Mesny, 2013). While the form and objectives of pedagogical case studies and research papers may differ from one another, some scholars have argued that the two approaches are not as irreconcilable as they may at first appear (Gill, 2011; Healey, 2004; Geschwing and Brostrom, 2015).

However, the case study method is not without its critics. Scholars have argued that it does not always reflect the complexity of managerial decisions (Bridgman, 2010; Chetkovich & Kirp, 2001; Darke et al., 1998; Mintzberg, 2004); it may be lacking in action-based decision-making (Argyris, 1980; Desiraju & Gopinath, 2001; Zivkovic, 2012); and it may be too distant from real business experience (Jennings, 2002; Mintzberg, 2004). In spite of such comment, there have been many research papers on case study usage (see, for example, Fox 1992; Healey and Jenkins 2005; Mesny 2013). However, there have been few, if any, that explore the managerial implications of the scholarly development of case material. Our paper presents evidence of a new and novel insight into the development and usage of case material, namely one that explores the motivations behind such scholarly activity.

2.3 Research objectives

The work required to design case studies can provide opportunities for teacher-researchers to improve both their teaching and their research practices (Gill, 2011; Netzley, 2011; Jenkins, 2011). For example, after designing and writing a case study, authors may choose to examine and interpret their work with regard to existing and new

theories with the aim of publishing in academic journals. Conversely, researchers may decide to use their research to develop case studies for teaching purposes. For example, scholars have used pedagogical case studies dealing with subjects as diverse as the launch of a new product (Mayrhofer and Roederer, 2009) or multi-channel strategies (Colla and Lapoule, 2011) to develop theories and publish research articles. These various research projects demonstrate that the case study method can be used to enable teacher-researchers to link teaching and research. While some scholars put research practices at the service of teaching, others use research to support their teaching. Other scholars may make no link whatsoever. The prime purpose of this paper is to draw out the implications for the motivation and management of teachers and researchers engaged in such scholarly activity.

3. Research Methodology

The first phase of our study used a qualitative, exploratory approach designed to identify the links identified by teacher-researchers. The sample for this stage focused on academics who were familiar both with case study writing and with the publishing of research papers. The second phase was a quantitative study using a questionnaire and relevant statistical analysis techniques (Woodside, 2011). The objective of the second phase was to quantify the links identified in the first phase amongst teacher-researchers who have either written or employed case studies. The sample for this phase focused only on those respondents who had written two or more case studies for the reasons related to the objectives of this research and explained more fully later in this paper.

3.1 The exploratory phase and the construction of the questionnaire

We interviewed nine teacher-researchers working in the field of marketing and

management who had experience of the link between teaching and research and had employed the pedagogical case study method. This sample included five European teacher-researchers. Three of them had written and published an article based on a pedagogical case study; three others had published a paper based on a number of pedagogical case studies; two had worked on and published a research article and a pedagogical case study concurrently; and one had used research to write a pedagogical case study. We divided our interview guide into two sections, the first dealing with the transition from pedagogical case study to research article; the second from research article to pedagogical case study. All the interviews, which lasted 50 minutes on average, were recorded and transcribed.

These initial exploratory interviews enabled us to identify various approaches to the usage of case studies to link research and teaching. In fact, all the respondents spontaneously mentioned the possibility of re-using elements from their pedagogical case studies and related teaching material in their research articles. For example, one respondent explained, *“The teaching note preceded the research article. Much of the research article is integrated into the teaching note. The teaching note is not necessarily structured in the same order that a research article but large parts are found in the article.”*

Some respondents revealed other links related to broader benefits of such activity. For example, one academic told us that, *“Using case studies in the classroom makes it possible to familiarise oneself with the data and deepen one’s analysis”*, while another scholar observed that by, *“Formalizing the elements of a case study, it is possible to give them a clearer structure; you encourage third parties to express ‘insights’ that improve your understanding”*.

An interviewee supported this with more detail: *“When testing the case I notice certain limits for my students and for myself: [I identified] what I had not really clarified with the implication that it needed more investigation and more development of the limits of a theoretical application when asking for conclusions from the students. We can judge what is really well explained or what is not well explained or what should be rewritten to illustrate a research [paper]; and if we need to investigate in greater depth the empirical data and do more interviews.”*

From the qualitative evidence, we identified three main areas of links between teaching and research: 1) the use of certain elements of a case study to enrich a research paper, 2) the use of certain elements of a research paper to enrich a case study and its teaching note, 3) the use of case studies in the classroom for research purposes.

3.2 Quantitative research phase

On this basis, we developed the questionnaire used in the second phase of the survey. In order to obtain accurate answers and to avoid any confusion between the various meanings associated with the notion of the case study, we asked multiple-choice questions that referred directly to pedagogical case studies. Among the questions making up the questionnaire, 19 referred to the links pinpointed during the exploratory interviews. In order to provide a structure for the questionnaire, we divided the links into four main categories (see Table 1) depending on whether elements were taken from research articles and added to case studies, or taken from case studies and added to research articles. In addition, taking into account the role of the teaching note, we also examined whether or not the case study was used in a classroom situation.

Insert Table 1 about here

To develop the sample of scholars, we employed the Social Science Citations Index (SSCI) database. We searched by identifying 6,646 articles published between 2005 and 2012 in journals indexed on this database, of which either the title, or the abstract, or the list of key words contained the phrase “case study” or “case studies”, and which were categorised in the fields of management, finance, business science, economics or sociology. Our decision to use the SSCI database related to our research theme, namely the link between teaching and research. By definition, the authors of articles listed by the SSCI participate in research. While it is possible that some of them are not teacher-researchers in the institutional sense, we nevertheless decided to designate them as teacher-researchers in order to avoid linguistic complications. According to the Essential Science Indicators of the ISI Web of Knowledge, which hosts the SSCI, the great majority of articles in the database originates from university institutions.

Although the research papers selected are linked to the notion of the case study, they are not necessarily pedagogical case studies. They merely indicate the potential interest of their author or authors in the case study method in general (pedagogical or scientific). However at this preliminary stage in building our quantitative sample, the purpose was to obtain a population of authors, the majority of whom would have a link between their research and teaching practices. In practice, the questionnaire was sent to 8,154 authors of research publications (researchers and teachers) throughout the world. We received 1,057 replies, or a rate of reply of approximately 13%. Seven hundred and sixty-five respondents claimed to have written at least one pedagogical case study in response to the following question: “How many pedagogical case studies have you written?”

Insert Table 2 about here

The questionnaire was structured around ten themes (see Table 2), the last four focusing on the use of four main types of links identified in the qualitative research phase. Since our study concerned effective links and how they were applied by teacher-researchers, we chose to focus on teacher-researchers who had written at least one case study as the main focus of this research. Specifically at this stage, we rejected from our sample those teacher-researchers who, although expressing a view on how pedagogical case studies could be used to combine research and teaching, had not themselves applied the approach. Table 3 lists the experience of respondents and shows that over two-thirds of our final sample claimed to have written two or more pedagogical case studies. We do not have additional information on the precise nature of those case studies nor on the students at which they were aimed. However, we suggest that the majority of our respondents are likely to have experience of developing and usage of pedagogical case studies in the sense used in this paper.

Insert Table 3 about here

Because the purpose of the research was to explore the links between teaching and research, we further reduced the sample in the second phase of our study to include only teacher-researchers declaring at least one link among the 19 possible links between the two topics: this gave us a sample of 702 respondents: see Table 4. Thus our final sample consisted exclusively of teacher-researchers that link teaching and research and have experience of applying such links.

Insert Table 4 about here

Table 5 describes the distribution of respondents by discipline according to SSCI categories. Over 60 per cent were active in the fields of management science and economics. An analysis of the answers given by the sample did not reveal notable differences between disciplines. Therefore, we have chosen for this paper to make no

distinction between subjects in our presentation of results.

Insert Table 5 about here

4. Research findings and discussion

4.1 Qualitative links between teaching and research

Before presenting the quantitative data using the statistical methodology outlined above, we began by employing the qualitative early research with a broader analysis of the questionnaires to outline some more general conclusions. The links that appeared most frequently involved the largest number of elements that were most easily reversed between from research to teaching context and vice-versa. These included extracts from interviews, elements of descriptions, conclusions and theoretical developments outlined in the case teaching note. For example, a British researcher explained, *“I clearly link a teaching note and a research article. The teaching note contains most of the research article, with a less scientific and more concise style.”*

By contrast, we also found evidence that case research, which potentially might be incorporated into research articles, was sometimes not used. This suggests a change in perspective in the transition from the case study to the research article that militates against the direct use of empirical material. We also observed that few bibliographical references were re-used and that, therefore, such items are not essential to the link between research and teaching. This suggests that the references used in writing a case study are not of the same nature as those used in academic research. This provides some evidence that teacher-researchers separate their teaching and research practices to some extent. They do not always fully reveal the academic sources on which their work is based when writing case material. This evidence is consistent with the “rigor relevance

gap” (Latusek and Vlaar, 2014): academics writing case studies may take the view that scholarly references have, in the final analysis, limited relevance to students after they have left higher education.

With regard to case discussion in the classroom, our evidence showed that teacher researchers identified a relatively large number of links. These links helped academics engaged in both teaching and research to clarify their conceptual approaches to the issues characterizing their work. Exchanges with students then led to the emergence of new theoretical considerations or clarifications that were worthy of being included in a research paper. While students were not necessarily directly involved in constructing the theories or boosting the scientific content of research articles, their questions were nevertheless capable of contributing to the on-going enquiry work of teacher-researchers (Aditomo, Goodyear, Bliuc & Ellis, 2013). All conceptual research is, in effect, necessarily based on a range of hypotheses that are regarded as true until tested and refuted (Tiercelin, 1999). However, student class discussion suggests that some things are not as clear-cut as they might first appear. Moreover, such classroom discussions may also provoke more practical considerations that can lead to the elaboration of further recommendations in a research paper. These results are consistent with the literature that teacher-researchers developing pedagogical case studies use class room debate to develop their thinking (Lapierre, 2006; Schieb-Bienfait, 2000; Legendre, 1998). Naturally, such links depend to a large degree on the type of student body concerned (Taylor, 2007). Discussions with graduate or MBA students differ from those with first year students, who often lack the experience required to understand the scope of discussions and the possibility of transforming the results of discussions into actionable knowledge, the emphasis being “on discovery and invention” (Argyris, 1980: 297).

4.2 Quantitative data: basic approaches to case usage

We used a hierarchical clustering (using Ward's method) associated with a multiple correspondence analysis of the outcome of our database questionnaire. This process allowed us to shift our attention exclusively to the synergy variables. Using R software (R Core Team, 2013), we tested various possible linear combinations of the identified variables, revealing three main dimensions from the database – see Table 6. To each dimension corresponds an ensemble of links that tend to be used together. Our research evidence shows that there is a pronounced division in the sample with regard to the use of case studies in the classroom, or at least with regard to their use relative to other links. First, there are those academics that use case studies in a classroom situation to advance their theoretical work. Second and by contrast, there are those who are happy merely to employ elements of case studies and research papers, while rarely, if ever, using elements of such case and other material to enrich their research.

Insert Table 6 about here

4.3 Quantitative data: the identification of five different groups of academics relating to teaching and research

The first data dimension measured the general degree of intensity of the link between case studies and research papers amongst the sample. The second dimension identified by the software measured the frequency with which case studies were used in the classroom. The third dimension provided an overall measurement of the uni-directional character of the relationship between the research article and the case study amongst the sample. Within these dimensions, the software then identified seven major groups of respondents that were associated with case study usage. After further analysis of the seven different groups, we decided to retain only five categories, because the

characteristics of two of the groups overlapped to a large degree with those of two others.

The first group is characterised by links based almost exclusively on the use of the case study method in the classroom, to the exclusion of all other links. Although such teacher-researchers in use few, if any, topics from their case studies in their research papers, they nevertheless use such subjects to develop their research background. However, they cannot be thought of as championing these forms of links. On the contrary, they tend to exploit case studies less than the overall sample population. Thus only 34 per cent of the respondents in this first group consider that using a case study for teaching purposes enables them to clarify certain concepts, as against 42 per cent for the overall population of the sample. We have named this group the “Partitioners” because they do not make direct links between teaching and research.

The second group consists of those respondents who rely heavily on the use of the case study method in the classroom for their research. 79 per cent of respondents in this group declare that the use of case studies in the classroom enables them to define better their research questions, while 86 per cent believe that it helps them to explain concepts more clearly. Indeed, a substantial percentage of the members of this group (24 per cent) do further fieldwork after having used a case study in the classroom. Importantly, they display a certain degree of enthusiasm for links associated with theoretical questions. Over half the members of the group re-employ theoretical considerations derived from their case studies in their research articles and vice-versa: 43 per cent re-use theoretical considerations derived from their case studies in their articles, while 55 per cent re-use theoretical elements from their articles in their case studies. It is the members of this group – which we have called the “Dialoguers” – who focus most consistently on the epistemological value and role of the case study method. Case

studies are not simply a reservoir of elements that can be re-used in a research paper, but tools for encouraging a scientifically fertile dialogue with students; they are, in other words, tools for producing new knowledge. For example and referring back to our qualitative evidence, one such researcher commented: *“Each time we write an article, it is a continuation of the use of our cases in class. We go further than the cases.”*

Our quantitative evidence identifies a third group of teacher-researchers. This group largely ignores any direct links between their research and the use of the case study method in the classroom. Only 14 per cent of this group considered that case studies can be directly used in the classroom to clarify various research concepts, compared to 42 per cent for the sample as a whole. They focused almost exclusively on other links: the selection of the conclusions of an article or extracts from interviews in a case study (53 per cent and 43 per cent, respectively); the selection of the conclusions of an article in the case study teaching note (61 per cent); the selection in an article of descriptive elements taken from the case study (41 per cent); but in each case without any further development of the item selected. We have called this group the “Recyclers.” They are the teacher-researchers who do not use the case study as a developmental tool, but are content to re-use certain elements from it without modification. Thus the descriptive term “recycling” is applied here to refer to something tangible in terms of either data or elements used in the writing of case studies, teaching notes and articles. Recycling consists in taking an element from an article and re-using it in a case study, or vice-versa. Our evidence shows that even these links are used less frequently, on average, than the sample as a whole. It is only in their re-use of conclusions from their articles in their case studies and teaching notes that they exceed, very slightly (and, even then, not significantly) the average for the sample as a whole (respectively 50 per cent and 59 per cent for these two types of links).

Our research evidence identifies a fourth cluster. This comprises those academics who, without entirely neglecting links deriving from the use of case studies in the classroom, focus very clearly on [transpositional synergies](#), particularly those associated with theoretical developments. Thus, 71 per cent incorporate theoretical considerations from their research articles into the case studies used in the classroom (as against 48 per cent for the sample as a whole), while 86 per cent re-use such considerations in the teaching note. For example and again referring back to the earlier qualitative data, a researcher explained: *“I bind the structure of the teaching case, but even more the article to the results of the literature review. The issues of my teaching cases are based on theories.”* They are also distinguished by the role of bibliographical elements in the development of their case studies and research articles. Almost half (49 per cent) incorporated the references used in their case studies to their research articles. Equally, 54 per cent incorporated the references used in their teaching notes into their research papers. This suggests that their case studies and research articles cover much the same ground or that there are other strong links between their research and teaching practices. It is here that they can clearly be distinguished themselves from “Recyclers.” We call such researchers “Uniters” because they do not simply recycle elements taken opportunistically from articles and case studies. Instead, they build bridges between articles and case studies by re-using material systematically. However, such academics rarely apply links based on the use of case studies in the classroom; for them, the case study method seems to be a point of convergence between teaching and research regardless of pedagogical practices. Again taken from the qualitative research, an academic explained: *“We published an article with a review of the literature, which is practically an expanded teaching note like the one we use to publish a case study. A thorough teaching note is an explicit link - a bit academic - with research.”*

Finally our research identifies a the fifth group that is similar to the fourth, except for the fact that its members are keen to apply links associated with the use of case studies in the classroom. The teacher-researchers included in this group re-use a substantial number of theoretical and bibliographical elements. Our sample showed that 88% of them incorporated theoretical considerations in their case studies and teaching notes, while 83% re-used the theoretical contents of their case studies in their research papers. Along with the fourth cluster, this group is characterised by its interest in theoretical considerations. Of all the groups identified, this is the one that maximises its resources, using all the available links. We have therefore named this group the “Maximisers.” Only the “Dialoguers” display a higher rate of positive response: specifically a 79 per cent response compared to 74 per cent for the “Maximisers”. Even here, the difference is not statistically significant. “Maximisers” displayed a strong interest in the epistemological aspects of the case study method as well as in links generally considered to be very marginal. For example, 26 per cent of them stated that the use of a case study in the classroom encouraged them to do more fieldwork, while 40 per cent used comments and suggestions made by students to improve their research listings.

4.4 Quantitative data: discussion of the relationship between the five groups

These five groups, the ‘Partitioners’, the ‘Dialoguers’, the ‘Recyclers’, the ‘Uniters’, and the ‘Maximisers’ represent five different ways that the academics in the research sample used the case study method to link their teaching and research: see Figure 1.

Insert Figure 1 about here

Referring first to the X-axis of Figure 1, this shows the role of theoretical and

bibliographical considerations coupled with the overall intensity of the deployment of such links. It was computed on the basis of the multiple correspondence analysis. A value of -1 on the X-axis indicates a low level of link while a value of +1.5 signifies strong links between the case study and the research article. For the Y-axis, this was also derived from the multiple correspondence analysis. It measures the varying frequency of the use of case studies in the classroom. On this latter axis, a value of 1.5 indicates a high frequency of use of case studies in the classroom with a view to advancing scientific knowledge, while a value of -1 indicates a very infrequent use of this type of synergy. Automatically determined from the Ward's method, a particular constellation of points is associated with each cluster, representing the replies (a cross, a '+', a square, etc.). For added clarity, we have manually circled the points in each group with a solid line. We have also circled with a dotted line the teacher-researchers who most frequently re-use theoretical elements.

For clarity, there are two other groups that are not represented in Figure 1 because of their similarities with the "Partitioners" and the "Maximisers". The first is characterised by a more intensive use of the conclusions deriving from scientific research in the case study itself. The second group is similar to the "Maximisers" in that both focus on links without displaying a particular interest in theoretical developments. However, these variations are too limited to justify identifying the two groups with specific practices, which is why we have preferred to incorporate them into the "Partitioner" and "Maximiser" groups.

5. Conclusions and management implications

The results of the study show that pedagogical case studies effectively played a role linking teaching and research amongst our research sample. This link was not limited to

the use of research to boost teaching practices. The evidence showed that pedagogical cases studies were also used to enrich scholarly research. In addition, other lessons can be drawn from our typology of users of the case study method. Our evidence indicated the frequency with which the case study method was used in the classroom. Moreover, it suggested that the interaction of students and teacher-researchers was able to stimulate further research concepts and considerations (Woodside, 2011). We therefore provide further evidence that the pedagogical case study that is designed to provoke reactions on the part of students may prove a significant contributor to research activity (Carbonneau and Héту, 1996).

The typology also reveals the diversity of existing practices, which range from the opportunistic use of a few elements of a case study in a research article to the profound exploitation of the link between research and teaching practices. The various groups of teacher-researchers we identified are distinguished by the different ways in which they use case studies in the classroom with a view to developing their theoretical reflections, but are not differentiated by the ways in which they apply the corresponding link to clarify managerial contributions. This evidence supports previous findings (Robertson, 2007) that academics' epistemologies are strongly influenced by the way knowledge is conceived of and structured when approaching the development of case material. Moreover, the evidence suggests that such epistemologies are a fundamental influence in the development of research, teaching and learning and therefore the research/teaching nexus.

In summary, while pedagogical case studies can be helpful in aiding teacher-researchers to link teaching and research and to meet their publication objectives, the approach has clarified the nature of the links. Our study shows that there are at least five different ways that academics approach the topic of teaching case studies and conducting

research. This has significant managerial implications both for individual academics and for institutions of higher education. For individual academics, the research provides insights on the most effective ways that they can develop and use potential links between their teaching and research activities (Brew et al., 2017; Davis and Graham, 2018; Jones et al., 2012). For institutions, the research suggests that the management of individual and groups of academics would benefit from a deeper understanding of the ways that such individuals or groups approach their tasks (Leisyte et al., 2009; Jenkins et al., 2007; Thornton et al., 2018; Waring, 2017). Such knowledge will then enable managers to better motivate, manage and incentivise individual academics to be more effective in their work. For example, higher education institutions could sponsor external or internal professors to explore and explicate the approaches relevant to the specialisations of their particular institutions. This might involve selecting a team of academics to research and design case material as a starting point that would link the different dimensions of their work and to better meet the publication requirements related to their research and teaching institutional objectives.

Our research has a certain number of limitations. We have not addressed the topic of the kind of changes that can be made to a teaching note with a view to transforming it into an academic paper; nor to the various styles of presentation of the material (McNair, 1971). In future research, it would be also valuable to address the question of the universalization of case studies, or of the choice of research field. The objective of this paper was not to test a particular model explaining the use of the case study method nor a specific approach to the link between research and education, and still less to evaluate the success factors of such a link or the role of the use of the case study method in it. These issues can also be addressed in later studies.

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Table 1. The 19 links pinpointed in the exploratory interviews

Elements from the case and its teaching note later used in writing the research paper	<ul style="list-style-type: none"> • The description of the situation • The results of the analysis • The theoretical contributions • Quotes from interviews • The bibliography
Elements from the research paper later used in writing the case study	<ul style="list-style-type: none"> • Extracts from Interviews • The conclusions • Theoretical considerations
Elements from the research paper later used in writing the teaching note	<ul style="list-style-type: none"> • The conclusions • The theoretical development • Quantitative analyses, where relevant • The bibliography
Contribution of a case teaching situation to the writing of the research paper	<ul style="list-style-type: none"> • Clarification of concepts • Clarification of managerial contributions • Improved definition of the problem • Identification of interesting theoretical perspectives • Identification of theoretical weaknesses • Improved organization of the literature review • Encourages deeper knowledge of subject

Table 2. The themes of the questionnaire

1. The number of pedagogical case studies written by the teacher-researcher.	6. The experience of the teacher-researcher in terms of the use of the results of an empirical analysis to develop both a pedagogical case study and a research article for an academic journal.
2. The degree to which teaching and research are associated	7. The influence of the classroom teaching itself on the method of writing the case study
3. The commitment of the teacher-researcher to that association	8. Elements taken from the research article and used in the pedagogical case study
4. Personal reasons for the link	9. Elements taken from a research article and used in the teaching note
5. The relevance of the use of a case study to the link between teaching and research	10. Elements taken from the case study and the teaching note and used in the research article

Table 3. Respondent's experience in terms of writing case studies

Number of case studies written	Number of respondents	% of respondents	Number of case studies written	Number of respondents	% of respondents
0	292	27.6%	3-5	262	24.8%
1	112	10.6%	6-10	118	11.2%
2	129	12.2%	10 and over	144	13.6%

Note: the zero and one-case respondents were not included in the subsequent links analysis

Table 4. Use of links

Number of links used	Number of respondents	% of respondents	Number of links used	Number of respondents	% of respondents
0	63	9%	9 to 12	153	21.8%

1 to 4	253	36%	13 to 16	46	6.6%
5 to 8	243	34.6%	more than 16	7	1%

Table 5. Distribution of respondents by discipline

Discipline	Number of respondents	% of respondents	Discipline	Number of respondents	% of respondents
Business & Economics	823	51.0%	Engineering	74	4.6%
Sociology	156	9.7%	Public Administration	66	4.1%
Operations Research & Management Science	100	6.2%	Environmental Sciences & Ecology	60	3.7%
Social Sciences	82	5.1%	Autres	254	15.7%

Note: the total is greater than 1,057 because individual authors may be involved in more than one discipline.

Table 6. Case Usage Data

The results significantly lower than average are highlighted in light grey; the results significantly higher than average are shown in dark grey

	Experience of case study method				
Type	Weak	Medium	Strong	Average	Fisher
Clarification of managerial contributions	17%	35%	37%	26%	25,86
Clarification of concepts	22%	31%	42%	29%	16,47
Improved definition of the problematic	16%	22%	31%	21%	12,69
Identification of interesting theoretical perspectives	15%	19%	29%	19%	11,87
No contribution to the article	32%	17%	21%	26%	11,56
Identification of theoretical weaknesses	9%	15%	15%	12%	4,76
Improved organization of the literature review	7%	10%	12%	9%	2,95
Leads to a return to the field	5%	6%	9%	6%	2,37

Figure 1. Five possible motivations that scholars employ to link teaching and research

